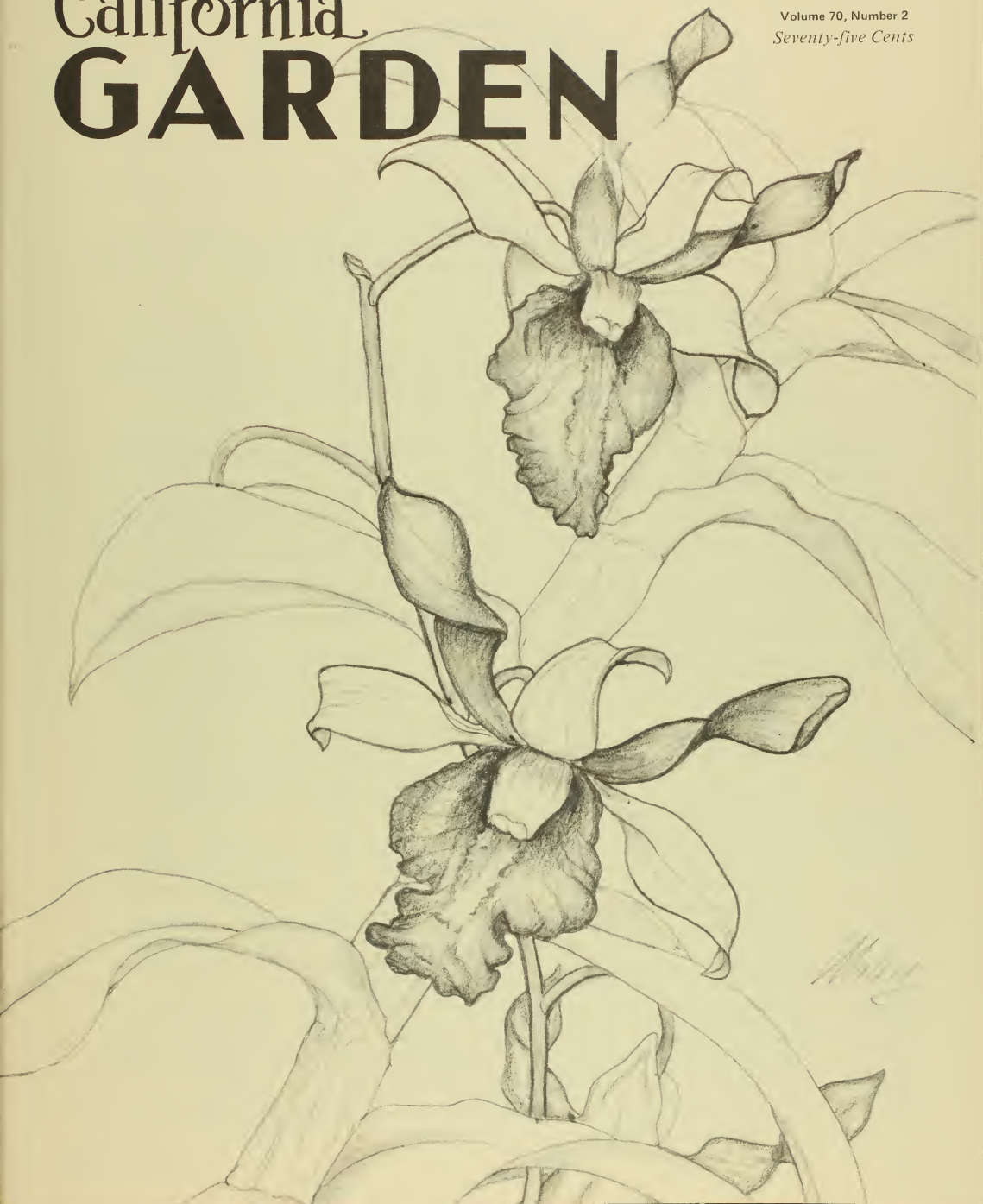


California **GARDEN**

MARCH-APRIL 1979

Volume 70, Number 2

Seventy-five Cents



FLORAL EVENTS

April Meeting

"Old Fashion Favorites"

FERNS AND VIOLETS

by

Ray Sodomka & Genie Hammond

Door prizes (potted plants)

Tuesday, April 17, 1979, 7:30 p.m.

Casa del Prado, Room 101, Balboa Park

San Diego, California

Flower Arranging Classes

March 6, 13, 20 & 27

10:00 a.m., Martha Rosenberg, Casa del Prado, Room 101, Balboa Park

For reservations/information call Mrs. Hoyt 296-2757

TOURS

- March 18 Sunday—Spring Desert Tour to opening of Anza-Borrego State Park's new Visitor's Center, and Annual Desert Gardens Walk—Price: \$8.00 8:00 a.m. depart Balboa Park (back of Organ Pavilion); 8:30 a.m. depart La Jolla Library (Girard & Wall Sts.)
- April 14 Saturday—Palm Springs & Desert Tour—Price: \$12.00 (No host dinner stop at San Geronimo Inn) 8:00 a.m. depart Balboa Park (back of Organ Pavilion); 8:30 a.m. depart La Jolla Library (Girard & Wall Sts.)

SHOWS

- March 11 DEDICATION OF THE McPHERSON WATERFALL, 2:00 p.m., Quail Botanical Gardens, Encinitas, Calif.
- March 23, 24 & 25 "ORCHID HOLIDAY"—33rd Annual San Diego County Orchid Show, Town & Country Convention Center, San Diego, Calif., Admission \$1.00, Friday & Saturday: 10:00 a.m. to 10:00 p.m., Sunday: 10:00 a.m. to 5:30 p.m.
- March 24 & 25 San Diego Chapter 119, Ikebana International Eleventh ANNUAL FESTIVAL OF IKEBANA & JAPANESE ARTS, Casa del Prado, Majorca Room, Balboa Park, San Diego, Calif., 11:00 a.m. to 4:30 p.m. (both days)
- March 31 & April 1 BALBOA PARK AFRICAN VIOLET SHOW, Casa del Prado, Majorca Room, Balboa Park, San Diego, Calif., Free, Saturday: 1:00 to 5:00 p.m., Sunday: 10:00 a.m. to 4:00 p.m.
- April 7 & 8 "IRIS JEWELS", San Diego-Imperial Counties Iris Society, Plaza Camino Real Shopping Center, Carlsbad, Calif., Saturday: 12:00 Noon to 6:00 p.m., Sunday: 10:00 a.m. to 6:00 p.m.
- April 8 CONVAIR GARDEN CLUB ANNUAL ROSE SHOW, Casa del Prado, Majorca Room, Balboa Park, San Diego, Calif., Free, 1:00 to 5:00 p.m.
- April 21 & 22 "JEWELS OF SPRING", San Diego-Imperial Counties Iris Society 15th Annual Spring Show, Free, Casa del Prado, Majorca Room, Balboa Park, San Diego, Calif., Saturday: 1:00 to 5:30 p.m., Sunday: 11:00 a.m. to 5:30 p.m.
- April 21 & 22 Coronado Floral Association 54th ANNUAL STANDARD SPRING FLOWER SHOW AND GARDEN TOUR, Spreckels Park, Coronado, Calif. (Orange Ave.), Admission \$1.00, Saturday: 1:15 to 6:00 p.m., Sunday: 10:00 a.m. to 4:00 p.m.
- April 21 & 22 FALLBROOK GARDEN CLUB SHOW, Bowers Auditorium, Potter Jr. High, 1743 Reche Rd., Fallbrook, Calif., Saturday: 2:00 to 8:00 p.m., Sunday: 11:00 a.m. to 4:00 p.m.
- April 28 & 29 SAN DIEGO ROSE SOCIETY 52nd ANNUAL ROSE SHOW, Conference Bldg., Balboa Park, San Diego, Calif., Admission 75¢, Saturday: 2:00 to 9:00 p.m., Sunday: 10:00 a.m. to 6:00 p.m.
- April 28 & 29 SAN DIEGO BONSAI CLUB, INC. SPRING EXHIBIT, Casa del Prado, Majorca Room, Balboa Park, San Diego, Calif., Free, Both days: 10:00 a.m. to 4:00 p.m.
- April 28 & 29 ESCONDIDO GARDEN CLUB FLOWER SHOW, "FLOWERS FOR SPECIAL OCCASIONS", San Diego Wild Animal Park, Saturday: 11:00 a.m. to 5:00 p.m., Sunday: 9:00 a.m. to 5:00 p.m.
- May 5 & 6 La Jolla Garden Club, 10th ANNIVERSARY STANDARD FLOWER SHOW "REMEMBERING...", La Jolla Woman's Club, La Jolla, Calif., Saturday: 1:00 to 8:00 p.m., Sunday: 10:30 a.m. to 4:30 p.m.
- May 5 & 6 Ohara Chapter of San Diego, IKEBANA ARRANGEMENT SHOW, Casa del Prado, Majorca Room, Balboa Park, San Diego, Calif., Free, 11:00 a.m. to 4:30 p.m. (both days)
- May 5 & 6 "DOS VALLES GARDEN CLUB PRESENTAR GRANDE EXHIBICION DE FLORES", Pauma Valley and Valley Center Garden Club, Pauma Valley Community Hall, Highway 76, Pauma Valley, California, Saturday: 1:00 to 5:00 p.m., Sunday: 12:00 Noon to 4:00 p.m.
- May 6 Quail Botanical Gardens, FUN & FUNDS FESTIVAL, Ecke Bldg., Encinitas, Calif., 10:00 a.m. to 4:00 p.m.
- May 13 San Diego Epiphyllum Society Show, "ORIENTAL FANTASIES", Casa del Prado, Majorca Room, Balboa Park, San Diego, Calif., Free, 11:00 a.m. to 5:00 p.m.

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MARCH - APRIL 1979

Volume 70

Number 2

Cover: A drawing of *Dendrobium Jester* var. 'Vicki Joy' AM/HOS-
by Pat Maley. She is a San Diego artist, and is President of
the San Miguel Branch of the American Begonia Society.

Contents:

- 37 DENDROBIUMS *Ben Hardy*
- 39 ORCHID COLLECTING *Robin Erickson*
- 41 ARTISTIC DESIGNS WITH ORCHIDS *Jananne Kennedy*
- 43 MEXICAN SPECIES ORCHIDS *Byron Geer*
- 47 1979 THE YEAR OF THE ROSE *Marianne Truby*
- 48 THE ROOTS OF BONSAI *Dr. Herbert A. Markowitz*
- 51 WATERCRESS *Rosalie Garcia*
- 52 TISSUE CULTURE OF REDWOOD
Dawn M. Morris, Dr. Ernest A. Ball, James A. Rydelius
- 56 WISTERIA *Helen Chamlee*
- 58 EPIDENDRUM *Adrienne Green*
- 62 NOW IS THE TIME *Penny Bunker*

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Dendrobiums

by Ben Hardy

Dendrobium pierardii
Photo by San Diego Zoological Society

AFTER GROWING ORCHIDS as a hobby for the past twenty years, I find that the genus *Dendrobium* has turned out to be one of my two favorites, the other being *Oncidium*. The genus *Dendrobium* is probably the largest of all orchid genera. In researching the various books and periodicals in my library, I find almost total disagreement as to how many species there are; the number ranges from 900 to 1800. It is probably a toss-up with the genus *Bulbophyllum* as to which is the largest group. This holds true also as to which has the widest range.

Dendrobiums and bulbophyllums spread over much the same territory: Japan, the Philippines, South China, India, Ceylon on through to Burma, Thailand, Malaysia, across Indonesia to Papua New Guinea, Australia, New Zealand, the Solomon Islands and on east to Fiji, Cook Islands and the Society Islands. The recently reported finding of a bul-

bophyllum on the west coast of South America would make that genus the more widespread of the two. The greatest concentration of dendrobium species appears to be in Papua New Guinea, with the India-Burma-Thailand crescent ranking second.

The British, as usual, were the first to import and flower a dendrobium species. This was *D. pierardii* (India to Malaysia) and the year was 1815. Three others were recorded before 1830: *D. speciosum* (Australia), *D. moschatum* (Burma), and *D. secundum* (China, Malaysia and the Philippines). Probably one of the most important for breeding purposes was *D. nobile*, introduced in 1830 from the Northeast India to South China area. The next two were *D. aggregatum* (Burma, S. China), and *D. aureum* (Ceylon, India) in 1837.

As you would expect from their extensive range, dendrobiums are found growing in a variety of habitats including such extremes as deep rain forest,

desert, freezing mountain tops and even areas near the sea where they withstand salt spray. The first orchid I ever saw growing wild in the tropics was a dendrobium species on the island of Guadalcanal in 1943. A large tree grew on a rocky projection at water's edge, with a stout branch hanging out about 7 feet over the breaking surf. On this limb grew a large dendrobium that was regularly subjected to spindrift.

Again according to which so-called authority you consult, you find the genus broken down by taxonomists into twenty to thirty sections. I am not going to belabor you here with this long listing and the many species. There is much confusion, misnaming, and synonymy among the dendrobiums from Papua New Guinea. Rudolph Schlechter, a German, did the early and most extensive collecting on this island and was still working on the genus at the time of his death, and all his herbarium sheets were destroyed during World War II. Duplicates of his notes are still readily available, but unfortunately many of them are too sketchy to be used for positive identification without the herbarium specimens.

Probably the most important early work on dendrobium breeding was done by Sir Jeremiah Coleman from 1900 to 1930, in England. His estate was known as Gatton Park, and you will find that name attached to several of his outstanding hybrids, the choicest of which is probably *D. Gatton Sunray* FCC/RHS. Coleman's work was mainly with the nobile group. Jiro Yamamoto of Japan has continued with the breeding of this group and the majority of the nobile hybrids currently available are from his extensive hybridizing program. There is a wide range of colors to choose from—pure white, pink, red, tan, and bright yellow. This is an easy group to grow and the most rewarding when they come into bloom in the early spring.

Since World War II the major work in hybridization has been done in Malaysia, Thailand, and Hawaii. Hawaii is in the lead by far with the University of Hawaii conducting an apparently extensive program, primarily developing hybrids that will be useful to the commercial cut-flower trade.

• CULTIVATION TIPS I USE

Those of you who reside in a frost-free area should do well growing dendrobiums out-of-doors all year-round, while the rest of us have to "put them away" in the winter. About five years ago I lost

twenty-four Yamamoto hybrids that I had hung outside the hothouse to get the thirty days of chilling they require. A very early 18-degree frost hit on Christmas morning and I ended up with twenty-four pots of mush.

Generally speaking, dendrobiums are sunlight lovers. On an orchid society tour of the Hawaiian Islands three years ago we visited place after place where they were growing in direct sunlight or under very light shade cloth. Here on the mainland our clear skies are clear, while theirs only appear to be clear. In Hawaii the air actually has an invisible humidity layer, so to speak, that cuts down the intense burning power of the sun's rays. I do grow quite a few of these orchids outdoors at our place, potted in medium orchid fir bark and placed under 65 percent shade cloth, and this seems to suit them fine.

The majority of dendrobiums like to grow in the smallest possible pots and really get rootbound. This creates a problem as some kinds grow quite tall and are hard to keep upright in these small pots. One way to keep them upright is to put the small pots inside larger pots packed with rocks. They are heavy feeders, so I feed them half recommended strength fertilizer every other week. Some of them have to be dried off, others have to be chilled for a week, while some need a month's chilling to get them to set flower spikes.

In the past year I have been experimenting with growing them on slabs of cork and having very good success. Fern slabs also make a good growing medium. Our 'Michael Kirch' doubled in size this past growing season and put out two flower spikes where before it put out only one. In addition it has two new growths.

To see the many varieties of dendrobiums in bloom go to an orchid society show and find those especially appealing to you. If one is really interested in growing them, one should first "dig" into some literature on culture. One book I recommend is *Home Orchid Growing* by Rebecca Northen. □

Editor's Note: The combined Western Orchid Congress and San Diego Orchid Society Show will be in San Diego March 22–29.

Ben Hardy is Past President of the San Diego Orchid Society and Chairman of the 1979 Western Orchid Congress.

Orchid Collecting

by Robin Erickson

Right: Oncidium macranthum — in every way a contrast to the “dancing doll.” The front lobe of the lip is a mere strap hanging down from a waxy basal crest and short side lobes. The sepals are large and ruffled, as are the lighter colored petals.



COLLECTING ONE'S OWN orchids in the wild can hardly be one of the least expensive ways of obtaining them, but it is undoubtedly the most rewarding. It is also the most thrilling, frustrating, awe-inspiring, dangerous, exhausting, and informative. One becomes informed not only about orchids, but about the country being visited, its geography, native people and culture.

Orchids are practically global in distribution, but are most plentiful in countries within 20 degrees of the equator. They are found mostly at altitudes between 1500 and 7000 feet. In the American tropics the greatest concentrations and the most varieties of orchids grow in the high-elevation cloud forests where nights are cool and humidity is high. Many other plant families including all manner of aroids and gesneriads, great numbers of bromeliads, epiphytic cacti, begonias, and ferns are found along with the orchids. Some of the most fascinating were the mosses and lichens, hundreds of different kinds, found nearly everywhere. Some trees, the old forest giants, literally drip with these plants, the limbs supporting staggering numbers of epiphytes.

When collecting in foreign countries, conservation of the native plants is a basic responsibility, especially in view of the collector's basically acquisitive

intentions. One should try to observe the following common sense ground rules. First, research beforehand the areas you intend to collect in, to determine which plants may be endangered; then leave these alone. Second, be certain that you can adequately care for all the plants you collect. Observe their growing conditions. Third, collect only a few of any given species. Even better, take only a division or cutting of a chosen plant, and leave the rest to renew itself. Fourth, collect in areas that are being harvested for timber or for crops. Immense tracts of forest land are being burned over for various reasons in these tropical countries. Plants dwelling therein will perish with the destruction of their habitats; your collecting would thus aid the cause of conservation. Perhaps the finest collecting in the truest spirit of the word conservation is that done not with a collecting bag, but with a camera.

Orchid hunting has its ups and downs (and not just with the terrain). I tend to recall the pleasures first, but it is hard to forget a few of the narrow escapes, many of the bone-aching weary nights, and some really unbelievable meals. All of our collecting experiences have been in Central and South America, and we have come away completely charmed by nearly all the places we have visited. Driving in some of these countries can be downright hair-raising.

All the guide books stress that you should never drive at night. There were times, however, when collecting was very good, there was much to see, and the day simply ended too soon. In the countryside, usually a mile high and five miles downstream in some unforgettable river canyon where orchids abounded but restaurants and posadas did not, it was necessary, on occasion, to do some night driving.

Animals are not the only hazards on the roads. One New Year's morning in Panama's famous resort, El Valle, we were up early for a rather lengthy drive into the hills. Just past a small village we came upon several inert bodies strewn along, and on, the road. Shocked and concerned, we stopped to give assistance, only to discover that these were merely "victims" of an evidently very joyous New Year's eve celebration. Too inebriated to stagger all the way home they simply slept wherever they had fallen, the road providing a warm pillow!

Much of orchid collecting entails a great deal of driving, and it does not take long to adapt to the modes and manners of Latin American drivers. There are excellent road systems in all of these countries. Much of the connecting network of roads has to be carved out of mountainsides. These road cuts with their scrub plant growth covering the slopes provide a very good secondary habitat for orchid species. One can comb these more accessible spots and generally find a good array of the representative species of the area. In places where many of the more desirable species of orchids may be found, these road cuts do tend to be collected out by other plant hunters or local Indians, making it difficult to obtain plants in certain locales.

Along just such a highway in Ecuador we traveled, jouncing along in our rented jeep. We knew very well that this was an area where one of the true treasures of the orchid family, the spectacular *Oncidium macranthum*, could be found. This orchid produces a 5 to 10 foot long branching flower scape that carries dozens of amber-yellow flowers, each fully 5 inches across. It is very lovely and desirable. I was quite sure there would be none left in this particular locality and we were not going to spend any time looking. Moving along at a good clip, I was paying no attention to the landscape when there flashed across my field of vision an image—that of a large swarm of butterflies in a glade we passed. I pondered it, this subliminal vision; I did not know

butterflies swarmed like that, huge butterflies at that, but maybe they were not butterflies, but what? Well, it was some distance up the road before we were able to pull over, leap out, and run all the way back to see. Breathlessly we stood and gazed at the most beautiful specimen orchid plant I had ever seen, the elegant *O. macranthum*, still looking for all the world like great golden butterflies! This orchid had escaped detection by other plant hunters because the foliage was completely hidden by a mat of vines and the flowers were visible only when the sunlight slanted at its present angle through the trees. We dubbed this plant our sixty-mile-per-hour orchid, as not many would stand out as it did among the foliage and flowers of this lush roadside, especially to the speed-crazed norteamericanos who occasionally travel them.

It was not always so easy. I remember spending one entire day driving north out of Quito and then west to the coast, some six hours just to reach the supposed location of a newly discovered and very unusual *Stanhopea* species. The trip was grueling, along cattle trails 2 feet deep in dust, and when the wind began to blow it was like driving through fog. We had to detour around several small landslides, no small feat, and when we finally arrived it began to rain. No matter, we braved it all in hopes of finding this rare and elusive flower of the wilderness. The trip home was even worse, the dust was now mud 2 feet deep and we had to wait hours while a road crew cleared away the latest landslide. The insects were fierce and we were absolutely starving. Nine hours it took to get back, most of the night. It was a day I would just as soon forget. For all our efforts and high hopes, we were not able to find a single orchid, the much sought after *Stanhopea* species or any other.

I have not forgotten, and am not likely to, the day I stood in the rain looking out over the river gorge below. How wild and awesome it was! Overhead two large birds were circling, almost floating, in the air currents. I had never seen birds with such a great wingspan. I watched them go until they disappeared in the mist and rain. Then it dawned on me what they must have been. I am convinced they were condors! Who would think that the tame and grotesque creatures at our own San Diego Zoo could be so impressive on the wing, could possess such splendor and grace? Looking back on it now, I can see that this is what it, the collecting experience, is all about. The real reason for going, going, and going. □

Artistic Designs with Orchids

by Jananne Kennedy

Right: Jane Farleigh swirls black painted broom foliage around white orchids.

Below: Helen Ard places spoon strelitzia in the upper background, white orchids for central interest and the green felt plant leaves at the base with white coral for balance and accent.



Sampler of Design by Guild Members

THE SAN DIEGO FLOWER ARRANGERS GUILD is a segment of the San Diego Floral Association. It meets monthly with a goal of creating top quality floral design and the members exhibit this art form to the public.

Each spring the Guild creates 24 arrangements for the San Diego County Orchid Society Show, thereby helping to increase use of this marvelous flower. Orchids, especially cymbidiums, are an exciting material for study and design. They last an exceptionally long time, especially with a dash of liquid plant hormone added to the water. They lend themselves to line, mass, or even abstract design. The public responds enthusiastically to their breath-taking beauty as continual inquiries at the flower shows clearly indicate.



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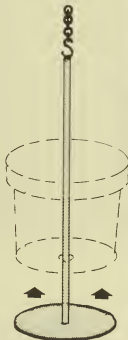
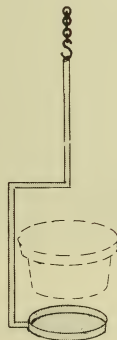


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Encyclia nemorale Photo by San Diego Zoological Society

ole'

Mexican Species Orchids

by Byron Geer

THE CULTURE OF MEXICAN species orchids out of doors is not new, by any means, but it is only in the last few years that orchid collectors have discovered the true extent of the possibilities. The mystique surrounding orchid growing has survived for far too long; even now many people think that they will not

thrive outside greenhouse conditions and that they are difficult to grow. Really, nothing could be more incorrect. True, orchids were at one time the plaything of the wealthy; exotic, expensive, rare and demanding in culture. The limitations were many, but only because their ideal culture conditions were

completely misunderstood or in some cases were deliberately misrepresented. All too often we still try to force them to adapt to our ways of thinking what is good for them without considering what they would like. We pot them in containers where their roots are closely confined, we drown them, we shade them heavily, we deprive them of fresh buoyant air and then meekly admit that they are difficult to grow because they wither and die under these unnatural circumstances. The gloomy picture has changed as we learned more about them, is still changing in fact, and this is all to the good for the many persons who have always been intrigued by orchids but were afraid to try them.

Anyone with a modicum of green thumb can grow good, showy orchids in the garden. No experience is necessary, no fussing over them is desirable. Failures are all too frequently caused by the babying we do. If they are potted or mounted suitably as epiphytes, given reasonable attention to their needs and otherwise left alone to do their own thing they will perform perfectly. No suggestion is made here that they be totally neglected. Any gardener knows full well that all plants have certain requirements of light, air movement, temperature, water, and food. Orchids, even the species easiest to grow, are no exception. It is the bringing together of these five factors in proper balance that really makes a good grower, and a more detailed review of these requirements, with some general rules-of-thumb, may be in order here.

With some minor exceptions, the Mexican species are not deep shade plants. It is true that they are often jungle growers, and this conjures up a picture of heavy forest canopy and its attendant restricted light. But in some cases this is not at all the proper picture. Forest tree growth, yes, but normally high up in the branches where the intensity of sunlight is broken only by sparse growth. Actually at certain times of the year many of the host trees are deciduous and the sunlight is at virtually full strength. In addition, many of our species and botanicals are not forest denizens at all, but prefer the tall grass of savannah plains, scrub brush or rocky outcroppings. Shade is certainly at a minimum under such conditions. Our rule-of-thumb, then, becomes "as much light as the plant can take without sunburning." Don't expect the lush, emerald green growth you might prefer, but your

plants should bloom well and this is, or should be, your primary objective.

Air movement and temperature requirements may perhaps be discussed together since they are closely related. Given the natural habits of most species, i.e. as true epiphytes, it follows that they need a constant, light movement of fresh air. Even the gentlest of breezes provides a continuing drying and cooling effect. Where ground level temperatures and soil moisture may be extremely high, just a few feet up into the forest canopy the air will be dryer and cooler. And for those who have traveled in Mexico who know better, please note that I stated "cooler" not cold. Nights can get really nippy in interior Mexico and there are species native to the high mountain regions where temperatures drop considerably, even to snow conditions at times. These species are not recommended for the southern California area simply because our summer heat levels are generally too high for them to perform satisfactorily. We have a paradox here in that, although we usually worry about keeping them warm enough in winter, with certain species the problem is to keep them cool enough in summer. An exact temperature range is impossible to set forth, but most Mexican species will do well with minimum night temperatures in the high thirties, dropping to freezing only occasionally, and an unlimited upward daytime range "as long as the plants are not under humidity or moisture stress." And further, it is absolutely essential that your plants have adequate uncrowded growing room with space for "unrestricted air movement around each one."

Probably the most critical factor, and the one on which it is easiest to go wrong, is proper watering and humidity. It has been noted that they dry out rapidly under natural cycles of temperature and air movement; it should also be noted that, in the wet season, they may be subjected daily or several times daily to torrential rainfall. They may be thoroughly soaked, then an hour or so later, will be completely sun dried. If we can duplicate to some extent this natural cycle, we are providing our plants with the environment to which they have become accustomed over the centuries. It follows then that a good soaking when the rooting medium is completely dry, with additional occasional misting to maintain humidity, should give our plants a near to ideal growing condition. Again to our basic rules, "let dry completely between waterings and maintain humidity by

misting on warm or hot days."

As with any other growing plant, a proper nutrient balance is a must. Orchids are heavy feeders during their growing season which is generally early spring through summer, and they need nourishment to promote their best growth. A balanced fertilizer, one in which the nitrogen-phosphorous-potash ratios are equal, seems to give best results. Many growers feed with each watering, in which case the nutrient dilution should be cut to about one-fourth of the recommended strength, but best results seem to be with feeding at full strength with every second watering from March through September; every fourth watering October through February. "Consistency in feeding has a good deal more to do with success than the type of food" however, and conscientious feeding with your favorite garden fertilizer will probably give you excellent results.

We have mentioned briefly about our foolish attempts to compel orchids to grow under completely artificial conditions. There is an excuse for the commercial or the cut flower grower, but none whatsoever for the backyard gardener. If their roots want to ramble, why not let them? This is quite easily accomplished with the use of tree fern slabs or pots. Such mountings assure adequate air movement at the root area, proper drying out and the leaching out quickly of what can be toxic salt build-up from our beloved Colorado River water. Growth will be full and hard with built-in natural resistance to fungal or bacterial problems, the flowers will have heavier substance and will last longer. Too, with this type of mounting virtually all repotting and dividing is eliminated. When a plant grows too big for its wall plaque, simply back it with a larger plaque without disturbing it. Such plants quickly get to specimen size and give you a far superior show of bloom. It is a mark of the rank amateur to be in a great hurry to divide his plants and make little ones of big ones. In general, orchids never reach their fullest potential until they are large plants. After all, would you rather see six or seven small plants with one flower spike apiece, or would you be more impressed with one large plant carrying six or seven spikes?

Although it may not be easy to find the Mexican species and/or the supplies you will need to grow them as they should be grown, most larger nurseries do have them from time to time. The supply is somewhat limited due to new federal



Above: *Epidendrum radiatum*

Photo by San Diego Zoological Society

Ed. Note: As an authority on orchids, Byron Geer has contributed many articles to this magazine, and is very active in the orchid societies.

restrictions on import, but they are well worth the searching out. Catalogue listings are available noting several hundred Mexican species and botanicals. Current prices are quite reasonable, and if you turn on to the unusual in shape, size and color of flower, the Mexican species are certainly for you.

Won't you join the growing ranks of species enthusiasts? □



THE ROSE was called by Sappho in 600 B.C. the queen of flowers. Cleopatra bathed in rose water. The French had rose festivals in the sixth century and California in the twentieth. During the middle ages a rose over the door of a meeting place symbolized secrecy—hence, “under the rose” or “sub rosa.” It is said St. Dominic once carried a garland of roses as he prayed and thought of each rose as a prayer, therefore, the Rosary.

—B.K.



FLOWERS can not be monopolized. The poor can have them as much as the rich. It does not require such an education to love and appreciate them, as it would to admire a picture of Turner's.... And as they are messengers of affection, tokens of remembrance, and presents of beauty, of universal acceptance, it is pleasant to think that all men recognize a brief brotherhood in them..... A hundred persons turned together into a meadow full of flowers would be drawn together in a transient brotherhood.

—Henry Ward Beecher

Flowers are words
which even a babe
may understand—





1979 THE YEAR OF THE ROSE

LOVE—FRIENDSHIP—PEACE

by Marianne Truby

This salute to the rose is the first time that many organizations, both professional and amateur, have formed a council to select a single flower and to publicize its name. Each of the participating groups has incorporated promotion of "The Year of the Rose" into its individual public relations programs for 1979.

This program sets the scene for an outstanding year for roses, rosarians, and rose lovers. Rose societies throughout the United States are busy planning special events to celebrate and observe this occasion.

California rosarians are fortunate to live in an area that produces outstanding roses for a longer period during each year than many other locations in this country. Prominent producers of bare-root roses maintain growing grounds in California. It is a major agricultural product, ranking seventh in the state.

Noted hybridizers have established their research operations mainly in this area. Herb Swim, Robert Lindquist, and Ollie Weeks, as well as William Warriner, all of southern California, have contributed the major portion of the All American selections for several decades. Of the three new All American selections for 1979, two were created in California—'Friendship' by Robert Lindquist, and 'Paradise' by Ollie Weeks, while New Zealand contributed 'Sundowner' by Sam McGredy.

A new 15-cent stamp, in booklets only, features the roses 'Medallion' and 'Red Masterpiece,' created by hybridizer Bill Warriner of Tustin, California. These rose stamp booklets are now available at most post offices throughout the United States.

Visitors of local rose society shows and exhibits will participate in an international contest to pick the most popular rose. Results of this "straw vote" for their local favorite will be sent to the American Rose Society to be included in the national vote which will also compete on an international level to pick a favorite rose.

Rose society shows and exposition displays of cut blooms gives one an opportunity to see the numerous and beautiful cultivars available. Excellent places to study and observe a variety of roses can be found in outstanding rose gardens around the country including the Parker Memorial Municipal Rose Garden in Balboa Park, San Diego. □

Mrs. Truby is a well-known southern California rosarian.

Ghost drawing by Skipper Cope

The Roots of Bonsai

Creating Bonsai from Nursery Stock

by Dr. Herbert A. Markowitz

A TREE GROWING in its natural state develops a complex system of roots. In the case of some large trees this system may total hundreds of miles in length.

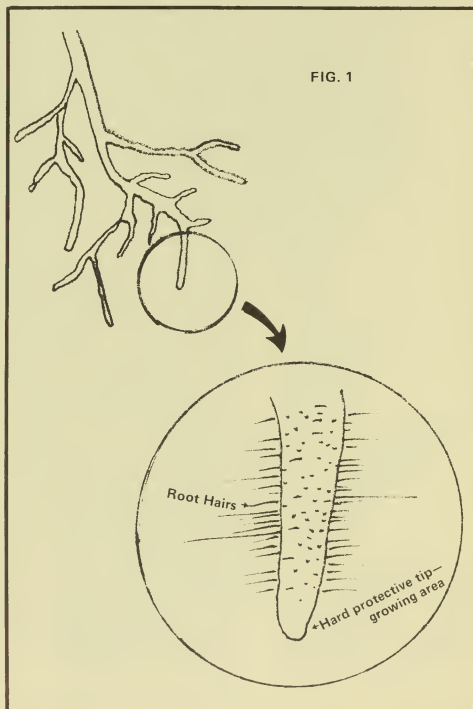
The roots have many functions; the most obvious from the bonsai standpoint are: (1) To obtain water for the tree. (2) To extract minerals and elementary chemicals such as nitrogen, phosphorus, and potassium from the soil. (3) To anchor the tree in the ground and, in so doing, to aerate and bind the soil into a firm mass that protects the ground from erosion.

The intricate anatomy of a root cannot be discussed in this article. Sufficient knowledge for our purpose is demonstrated with a magnifying glass.

Figure 1 shows the hard growing tip of the root. This tip penetrates the soil and has a protective cap which appears as a white tip in most tree roots. Except for certain species of plants and trees excess moisture in the soil causes softening of the probing root cap and the root hairs, resulting in root rot.

The very fine root hairs behind the cap absorb water and nutrients which are carried up the tree to the leaves via channels in the xylem of the trunk. Each root hair represents a single microscopic cell. The root hairs live only a few days so the tree must develop new root tips which grow out, exploring for new sources of water and nutriment; curling around stones and rocks, probing deeper and wider in all directions. The root hairs increase the absorption surface of the root system more than twenty times. The roots receive their sustenance (created by photosynthesis in the leaves) via delivery channels in the phloem of the trunk on the outer surface of the cambium layer.

In order to plant a tree as a bonsai the roots must be trimmed to fit it into a shallow pot. The structure and function must be respected in the process of cutting the roots and pruning them during the potting procedure. Cutting and pruning serves the dual purpose of getting rid of thick, space-occupying and non-functional roots and stimulating the growth





of young feeder roots with fresh new root hairs necessary for nourishment of the new tree. As much as one-third to one-half the root ball can be removed from a plant in converting it to a bonsai tree. This will, of course vary with the variety and type of tree.

The first step in the potting procedure is to remove the plant from its nursery pot. The bottom one-half to one-third of the root ball is then cut off with a sharp knife. The soil in the remaining portion of the root ball is carefully removed by raking it out with a chopstick or other blunt wooden stick until only about one-third of the original soil in the central portion of the root ball remains. In doing this care should be taken to avoid drying of the fine root hairs on the feeder roots, by either spraying with water or gently soaking the root ball. The remaining long and thick older roots are now cut off at a suitable length, to allow placing the plant in the bonsai pot. Cut them on a slant with a sharp tool, the cut surface being on the underside. Where there is a tap root this should be cut off at a point level with the remaining root ball. This will stimulate the formation of new feeder roots which will grow out horizontally.

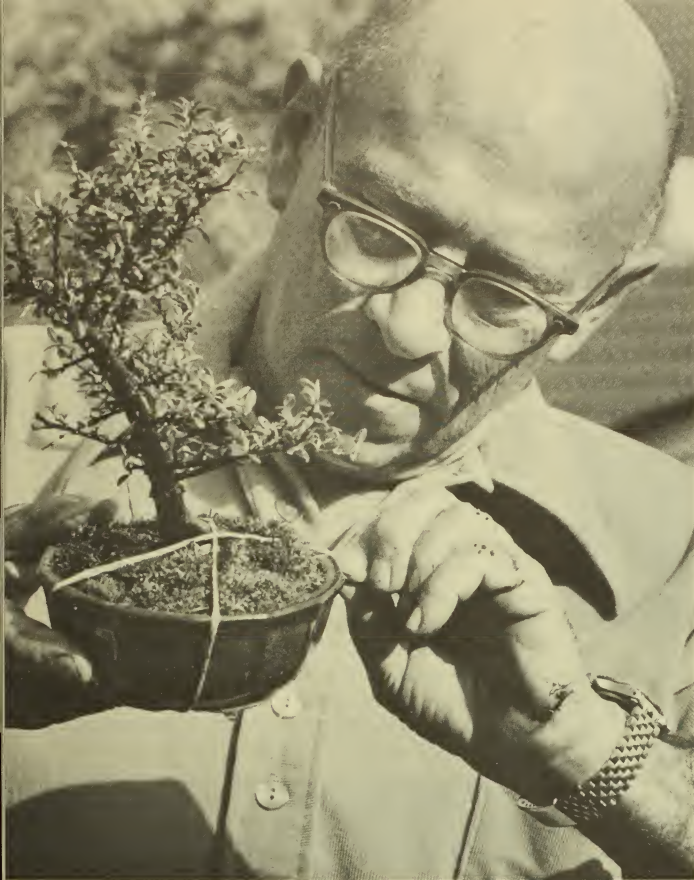
In addition to removing the soil from the root ball it is important to remove some of the surface soil. This is generally done by carefully raking out the surface soil in two or three areas extending out-

ward from the trunk in a wedge shaped fashion as in a cut of pie.

In removing the surface soil it is of course necessary that some surface roots be retained to enhance the appearance of the bonsai, giving it the appearance of a tree growing in its natural environment. It is not necessary or wise to expose too many surface roots. Those surface roots which grow out directly from the tree trunk and improve the taper of the trunk are desirable. It is also important to have the visible surface roots growing in a radial fashion rather than curling around the trunk (as is sometimes seen in trees grown in nursery pots). Fine, thin surface roots should be removed.

After selecting a properly sized and shaped pot, the drainage holes are covered with wire mesh. A layer of suitably sized gravel is placed in the bottom of the pot, then a layer of planting mix. The tree is then held upside-down while some of the planting mix is worked into the root ball with a chopstick. Without losing the soil the tree is turned up and into the pot. The planting soil is then poured over and around the root ball and meticulously dispersed throughout all the spaces between the roots and over





Dr. Markowitz, a retired physician, is an expert in bonsai work and has won many awards for his bonsai—

them. The soil mixture is important—it should drain rapidly yet be of a consistency to encourage development of a vigorous system of roots to support growth of the tree. The soil is not tamped into the pot, it is distributed amongst the roots so as to eliminate all air space which might later lead to root rot.

To further aid in distribution of all the soil particles throughout the root system the potted tree should next be immersed in a water bath deep enough to just cover the surface of the soil. This soaking will force air bubbles out and will let the soil fill vacant spaces. When no further air bubbles occur, or after about 30 minutes, the potted tree is removed from its bath and sprayed and watered from above. An additional spraying of the surface soil with vitamin B-1 solution is advisable. The application of a surface layer of moss at this time will help retain the moisture

of the soil.

In order to avoid unnecessary motion due to wind and accidental jarring of the newly planted tree one should tie the tree trunk and root ball into the pot by means of a wire around the outside of the pot. For the next several weeks the soil should be kept moist, but not wet.

Fresh new feeder roots and root hairs can be destroyed by fertilizers. Therefore, it is recommended that the tree not be fertilized for at least six to eight weeks and then only with highly diluted organic fertilizers.

In summary: cautious handling of the root ball and a knowledge of the root structure of a plant is vitally important in bonsai work. Proper care will allow the creation of a miniature tree from readily available nursery stock. □

WATERCRESS—Harbinger of Spring

by Rosalie Garcia

WHEN THE WINTER RAINS produce rivulets of water in the ravines of southern California, a crisp, turgid, juicy plant with a peppery flavor, that attracts both children and adults, appears to float along the streams. All through the temperate zones of the world the same thing happens as the temperature warms up and streams begin to flow. It is the same watercress that was known to the Greeks, Romans, and Persians. Brought to the United States from Europe it has again escaped to the wild. Many of the old homesteads established where there was a spring always had a supply from the little stream the spring produced.

Watercress, *Rorippa nasturtium-aquaticum*, is in the mustard family, Cruciferae. Although our common nasturtium is botanically of a different genus, both have the peppery flavor that is pleasant in salad and seasoning.

Watercress is best known as a wild plant that grows in running water in shaded places, although it can be grown in more artificial surroundings if flooded daily. For years I grew it in a shady place beside a water faucet, in an old pink baby bath tub that had cracks in one end. I filled the tub with my homemade compost, planted seeds and flooded it every day. There was some growth all year, but from early spring until the hot days of summer, there was continuous growth which I cut for seasoning and salads. Our San Diego County Agricultural Agent says he knows of no one who grows watercress commercially in southern California because it takes too much water. What we get in our markets comes from areas where there is abundant water, possibly from Oregon and Washington where it may be even harvested from the wild. It is cultivated extensively in Florida for Eastern markets. My own tub planting perished in one week when I was away and it did not get the daily flooding.

Hydroponic growers often have a shallow pan of cress nurtured solely by chemical nutrients; this is not quite so spicy as the wild variety.

Since watercress is a water plant, it wilts quickly out of water, causing the bunches in the market to be wilted and unattractive. One can revive it in a pan of cold water for at least one-half hour, which also allows the sand and dirt to go to the bottom. Shake off the water, put it in a plastic bag (with a paper towel in the bottom of the bag) in the refrigerator crisper where it will last for several days.

If one can harvest a gallon or more of watercress or buy three or four bunches, it can be cooked like spinach and seasoned with butter, pepper and salt; or with crumbled bacon and some of the fat. It adds a piquant flavor to other cooked greens and vegetables when stir fried in a little hot oil, as we have learned from Oriental cooks.

Watercress is most often seen as a garnish for salads, meats, eggs, and fruits. But as pretty as the sprigs of crisp leaves are, it is almost a waste, for too many do not eat the garnish. Louis de Gouy in his *Gold Book* (my favorite cook book) extols the vitamin and mineral content, its A, B, C, D vitamins and iron deserve consideration. The English have long used sprigs in bread and butter sandwiches for their teas, and the French early learned that a handful of cress tossed with oil and vinegar and other greens pepped up the green salad. They also found many uses for chopped leaves and tender stems folded into omelets, scrambled eggs, mixed with cream cheese for sandwiches, and for sauces. Whirling in the blender with mayonnaise or sour cream produces a delicious green dressing with an elusive, spicy flavor. When used along with chopped mint in fruit cups, another dimension in flavor is produced.

Those who have a fountain in their garden can easily grow their own watercress in a flat basin set in the runoff of the fountain or in the flow. The thrill of running out and cutting one's own fresh sprigs is something special. □

TISSUE CULTURE OF REDWOOD

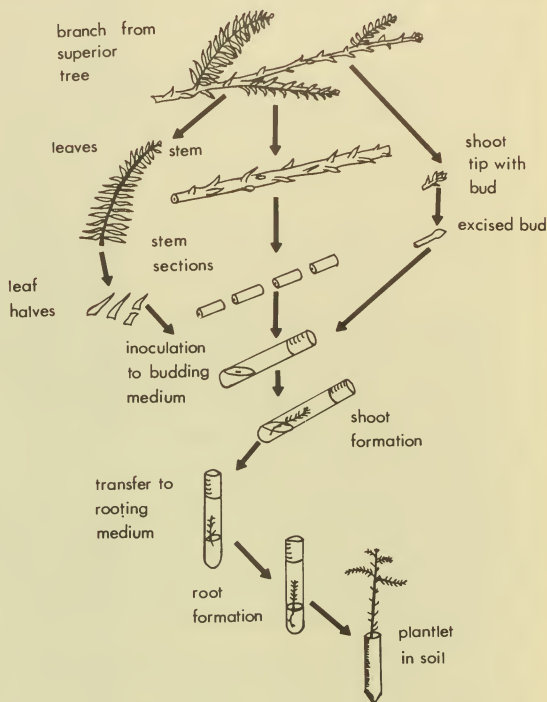
by Dawn M. Morris
Dr. Ernest A. Ball
James A. Rydellius

TISSUE CULTURE, or cloning, has been much in the news in the last few months. As a general rule, few people really understand the purpose or procedures of cloning and have tended to become unduly concerned with the probability of man's survival in the face of this new threat to his individuality. The cloning of human beings is a far distant possibility because the technology for such an incredibly complex procedure does not now exist nor will it soon. Plants are, however, an entirely different matter.

The cloning of plants, in the strict sense of the word, dates from the first time man discovered that some plants could be propagated by making and rooting cuttings. Cloning is, after all, simply reproducing an organism without the use of the normal genetic recombination such as is found in seed production. The more modern connotation extending the definition of cloning to include the use of laboratory facilities and scientific expertise originated in the 1930's and 40's. The terms tissue and cell culture are used for the more complex procedures to differentiate them from the general field of cloning.

Many of the best known horticultural varieties of fruit and vegetable plants as well as many ornamentals are routinely produced by tissue culture procedures in nurseries across the United States. Some of these include strawberries, asparagus, African violets, Boston ferns, bromeliads, daylilies, and orchids. A relatively recent addition in this area is our work with the California redwood, *Sequoia sempervirens*.

As a pioneer in the field of tissue culture, Dr. Ernest Ball began working with redwood in 1950. Although he had success with the first stage of the process, producing callus with buds from plant cuttings, not enough was known of the plant hormones at that time to allow complete regeneration of plantlets. In 1975, James Rydellius of the Simpson Timber



Sequence followed to tissue culture *Sequoia sempervirens*

Company of Arcata, California, requested Dr. Ball to resume work on the redwood and has provided the funds necessary for the research in the form of grants to the University of California at Irvine.

The tissue culture procedures involved in this project are typical of those used throughout the field and will illustrate for the reader the basic steps which are followed to produce thousands of genetically identical individuals from a single parent.

With *Sequoia*, we start with that portion of the tree which is most abundant and easy to obtain, the branches, (see diagram). Choosing either a branch from the tree top or, preferably, a basal shoot, careful attention is paid to assure that the material is from the most recent year's growth. All the side branches and leaves are carefully removed from the main stem and the surface of the branch is thoroughly washed with soap and warm water to remove the dirt, fungi, and bacteria which cover it. The branch is then cut into several pieces about 4 inches long and placed in a 50 percent solution of chlorine bleach. The bleach solution kills any remaining microorganisms, surface sterilizing the branch. The interior tissues of the branch are normally free of microorganisms.

The branch pieces are then taken into a sterile room where they are removed from the chlorine solution, cut into



one-half inch pieces and sterilely placed in test tubes which contain a medium formulated to stimulate growth (fig. 1). The medium normally contains the minerals which plants are known to require, sugar for a nutrient source, and a complex of vitamins and plant hormones, all solidified in an inert gelatin-like substance known as agar.

The test tubes are placed under light banks which produce the correct amount and type of light for plant growth. The branch pieces are left for a period of time ranging from 2 weeks to several months. During this time, most plant cultures will form callus which is a mass of cells which have not been specialized into functional units such as leaves or roots. The *Sequoia* branch pieces differ in this respect as they do not form much callus before bud initiation takes place. Slight callus formation occurs beneath the surface of the branch pieces, rapidly followed by bud initiation (fig. 2). Each branch piece from the tree top will form 10 to 15 buds, but the basal pieces will form as many as 75 buds each.

Once the buds have formed and have elongated somewhat, (to about 2 inches, fig. 3), the next phase of tissue culture takes place. The shoots must be induced to form roots. The formation of shoots or roots is known to be influenced by two classes of hormones, auxins and cytokinins. By altering the balance of these in the medium to which the shoots are

Fig. 1: Test tube containing a branch piece in sterile medium (magnification 1 X).

Fig. 2: Bud formation on a branch piece (magnification 3 X).

Fig. 3: Elongation of buds. These are ready to be rooted (magnification 2 X).

TISSUE CULTURE OF REDWOOD (Cont.)

now transferred, roots are formed on the base of the shoots (fig. 4). The cloned redwood is now complete and capable of surviving on its own outside of the test tube and the laboratory.

Another procedure, hardening off, is employed to adapt the fragile plantlets to the more trying environment of the greenhouse. The plantlets are abruptly shifted from the sugar containing, microorganism-free culture medium to soil that is swarming with microorganisms and lacking in ready-made food. In this new environment which is normal to most green plants, the survival of the plantlets will depend on their ability to manufacture their own food by photosynthesis and to resist the attack of the microorganisms. The plantlets removed from the test tube are placed in soil and covered with a large glass tube (fig. 5). This reduces the water loss from the plantlet until it can increase the cutin, or wax layer, which redwood normally has on its leaves, and can undergo other hardening processes. Once these changes occur, the plantlets become stiffer and can function on their own in the greenhouse, (fig. 6) and, eventually, in the open forest (fig. 7).

The culture of branches being successful, we have also used the above techniques to form plantlets from leaf halves and from shoot tips. The leaf half procedure requires a period of dark treatment during which all light is excluded from the tissues. This procedure is, perhaps, more spectacular than the branch procedure since the leaves of the redwood are very small and the production of an enormous tree from such a small beginning is impressive.

The procedures described here are, of course, presented in simplified form. The specific procedure, and medium for each plant and even each plant part must be worked out carefully by repeatedly trying the known and then experimenting with the unknown. The combinations of minerals, sugars, and hormones are nearly infinite in variety and it may take years to define the best system for the plant which is to be cultured. The research for *Sequoia* has taken four years and is still in process. New discoveries add to the field daily and it is nearly impossible to test every reported new hormone and medium. The field requires an in-depth knowledge of the scientific literature as well as a thorough grounding in basic techniques.

Assuming that one has the above accomplishments, what makes a particular plant a feasible project? Why go to all the expense, the hard work, and the frustration of tissue culture when the plants themselves are capable of duplicating without aid from man? Aren't we upsetting the natural order of things by artificially producing plants? Will we soon see entire forests of identical trees growing in regimented rows? These are a few of the questions which tissue culture has raised. The answers lie in the basic purposes for cloning.

Sequoia sempervirens, the California redwood, is an excellent subject for tissue culture. Firstly because it is an economically important crop for the state. The growing and lumbering of redwood is a multi-million dollar business and it employs thousands of people in California. The tree is limited naturally to the California coastal fog belt. The increasing amount of acreage being incorporated into state parks is

severely reducing the timber industry holdings and is causing unemployment in the northern counties of our state. The timber companies wish, therefore, to maximize the yield of the trees on their remaining holdings. Tissue culture will reproduce those trees which have shown superior growth abilities, giving a crop of faster growing, better quality lumber.

Secondly, *Sequoia* normally reproduces in two ways: from seed and from basal sprouts. The germination of seed is erratic, sometimes giving as few as one seedling for every ten seeds sown. The tree in nature compensates for this deficit by forming burls at its base which are a collection of buds. Should anything happen to the main axis of the tree, these buds sprout and form new trees. Occasionally it is possible to see an old stump ringed by new trees (the cathedral stands). This formation of stump sprouts indicates that the *Sequoia* is by nature a highly regenerative plant conducive to tissue culture.

As for upsetting nature by artificially producing plants, cloning simply duplicates the natural ability of the redwood. The cloning procedure insures that the genetic code which produces the best trees in a stand is preserved in the new individuals which will replace the parent once it has been lumbered. The size, shape, and quality of the tree will depend a great deal upon this code but each tree is an individual and will be subjected to the environment as such. Cloning provides an advantageous start for the tree, but from there on, it is on its own. The regimented "orchard" forest of identical trees is imaginary.

Even if cloning of the redwoods should proceed on a large scale, the production of cloned plantlets will never replace the accepted use of seedlings to replant the forest of northern California. New crops of seedlings give the possibility of obtaining new superior trees that may, in the future, be cloned through tissue culture. As the use of seed formed naturally continues, carefully controlled genetic cross breeding will also occur to produce more new strains. The trees selected for cloning at present by Simpson Timber number approximately 200, giving us a wide variety and a large gene pool from which to draw.

Another objection which is often made to cloning is that having large stands of genetically identical plants leaves the whole vulnerable to destruction from a fungus or virus to which it may be susceptible. Once again, *Sequoia* is unique in this regard as it is naturally immune to pathogens. Once the redwood passes through the seedling stage, it has the ability to withstand fungus, bacteria, insects, and even fire. It is extremely unlikely that any massive losses could ever occur.

Most plants are not so excellently equipped by nature for survival as is the redwood, nor are most such excellent subjects for tissue culture. Many of the now routinely cultured plants are of economic importance to farmers, nurserymen, and florists. Uniformity of the crop insures the farmer of maximum yield and quality, the florist of dependable flower color, size, and shape, and the nurseryman of salable plants. Used properly, tissue culture is an advantageous technique for providing known varieties in abundant and uniform numbers. □



Fig. 4: Shoot with well developed roots (magnification 1.2 X).

Fig. 5: Plantlet after transfer to soil. The large glass tube inverted over the plantlet provides protection (magnification 0.5 X).

Fig. 6: Plantlet after 3 months in soil. The main axis is elongating and forming normal leaf sprays (magnification 0.5 X).

Fig. 7: Plantlet after 4 months in forest near Mad River, California. Plantlets at this stage are growing twice as rapidly as seedlings of the same age (magnification 0.25 X).

Dawn M. Morris is the research assistant to Dr. Ball. Dr. Earnest A. Ball is Professor Emeritus, Departmental and Cell Biology, University of California, Irvine, California. James A. Rydelius is in research, Research Dept., Simpson Timber Company.

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Wisteria

by Helen Chamlee

WISTERIA IS A TWINING WOODY flowering vine, noteworthy for its vigor and long life.

If the wisteria has a fault, it is that of too much enthusiasm. It twines, yes indeed, round and round until its support is completely wrapped in smooth brown coils. And does it grow! Those reaching streamers would climb the nearest power pole and just go on down the wires to the end of the block, if allowed to do so.

But we, the lucky people who have and love these vigorous vines, have come to know that they are not invincible. Once trained to the form desired, they respond quite readily to a modest amount of yearly attention. A wisteria may be trained as a small tree, a living design against a wall, or a ceiling on a pergola.

However, one must keep track of what's going on during its formative years and pinch or cut accordingly. Maintaining the form is simple thereafter. I'd better qualify that: if your wisteria is to be trained along the eaves of a two-story house, then the necessary pruning and anchoring could be a major undertaking.

It seems odd to me that gardeners who regularly prune their roses as a matter of course would shy away from training a wisteria, but such appears to be the case. A wisteria cuts easily with a snip of shears, and it doesn't even have thorns.

We are advised to prune deciduous plants while dormant, but wisteria apparently is not harmed by cutting back in summer or fall. In fact, a vine so rampant that it could top off a TV antenna before stopping to rest is best treated with some nipping in



the bud. A vigorous branch, cut back to two or three nodes, will forget about heading for the moon and produce flower buds at these nodes. It's flowers we're after, isn't it?

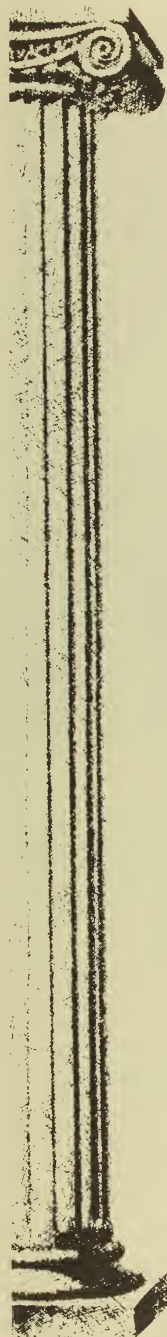
The two species commonly available are the Chinese, *Wisteria chinensis*, and the Japanese, *W. floribunda*. Chinese wisteria is the one that covers itself with purple glory in March. The bluish-violet flowers of its fat racemes open nearly all at once, before the foliage appears, and for a few weeks it is the sight of the neighborhood. There is also a white form, *W. c.* 'Alba,' which is lovely against red brick or dark wood.

To my mind the Japanese wisteria is the more attractive of the two. Its leaves, with their more numerous leaflets, are longer and more graceful; its long drooping racemes of pale flowers are more interesting as they open from the top downward, and they have a delicate yet pervasive fragrance. Silvery green new leaves appear at the same time as the flowers and the oriental screen picture is complete.

Culture of the wisteria, in my experience, is simplicity itself. They are watered about three times during the dry season. They are out in full sun. They are given no fertilizer. I suppose that fertilizing while the plant is getting established might bring it along faster, but after that you don't want it to go any faster, anywhere, just to stand there and bloom. □

Helen Chamlee has recently been elected a fellow of the California Native Plant Society.

Photo by Bill Gunther



Epidendrum

For the Arranger's Garden

by Adrienne Green
Bill Mackintosh photo

EPIDENDRUMS ARE EPIPHYTIC or terrestrial orchids which flourish and bloom outdoors in southern California gardens. The best known of the reed-stemmed hybrids, *Epidendrum o'brienianum*, is featured in the arrangement. Its vivid red flowers are produced in dense clusters one to two feet above the foliage. Each blossom is the shape of a cattleya orchid in miniature.

For best results give these plants an abundance of sun, combined with a shaded root run. A heavy mulch will help if they must be in full sun. They do better in light shade, as too much sun will cause browning of the foliage. Where winters are cold these orchids may be grown in pots, set outdoors in summer and moved indoors in winter.

Feed about once a month with a mild liquid fertilizer. When blooms fade, cut the flower stems back to within one or two joints of the ground. The long stems, which produce aerial roots, can be used to start new plants. Cut and set them in the ground or share them with friends.

For arrangements that last a long time the epidendrum cannot easily be surpassed. In our photograph the shallow bronze basket contains a needle cup holder. Dainty miniature ivy is combined with the fairy-like orchid blooms in an informal design.

Replenish evaporated water in the cup holder every two or three days and remove spent flowers. You will enjoy many days of pleasure from these lovely terrestrial orchids. □



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—B.K.

now is the time

—A CULTURAL CALENDAR OF CARE FROM OUR AFFILIATES—

compiled by PENNY BUNKER

BEGONIAS Margaret Lee

- ✓ to apply top dressing to make sure roots are covered.
- ✓ to repot those that have heavy and packed soil.
- ✓ to protect from too much water by heavy rains.
- ✓ to clean up all dried leaves, spent blooms, and dead wood.
- ✓ to spray for disease control.
- ✓ to start feeding; if not fed regularly all year, once a week with $\frac{1}{4}$ strength of any all-purpose plant food is better than once a month with full strength solution.



BONSAIS Dr. Herbert Markowitz

- ✓ to gradually move bonsai into the sun; take particular care of deciduous trees to avoid scorching new leaves.
- ✓ to protect from extra cold—place in garage or under cover.
- ✓ to protect from too much water by heavy rains.
- ✓ to watch new growth and see that each tree has sufficient moisture for its needs. Deciduous trees with new growth need more than others.
- ✓ to graft deciduous trees.
- ✓ to repot plants; shape to conform to container or design.
- ✓ to wait until April to fertilize.



CACTUS & SUCCULENTS Verna Pasek

- ✓ to repot overgrown or root-bound plants; add new soil to those needing a boost for growth.
- ✓ to protect from too much water by heavy rains.
- ✓ to fertilize as new growth starts.
- ✓ to propagate by dividing or by cuttings. Protect from sun or drafts after surgery. Do not overwater.
- ✓ to protect delicate succulents from aphids—may use malathion.
- ✓ to check for mealy bugs under leaves; use equal parts of alcohol and water dabbed on with cotton swabs.
- ✓ to fertilize with 10-10-10 to promote flowering.

DAHLIAS Abe Janzen

- ✓ to prepare the ground for planting by adding humus and fertilizers especially super-phosphates and potash.
- ✓ to place tubers in starting material and place in a warm spot to sprout, watch moisture so tuber will not rot.
- ✓ to plant sprouted tubers (after two or three weeks)—dig hole 6 inches deep, place tuber on its side (sprouts up) about 2 inches from stake; cover with 2 inches of soil and water.
- ✓ to watch water—do not allow soil to become soggy wet. As plant grows, draw soil around and protect from snails.
- ✓ to be sure to drive name stakes in ground before placing tuber.



CAMELLIAS Les Baskerville

- ✓ to feed plants with fish or acid fertilizer.
- ✓ to pick up every bloom and petal to prevent petal blight.
- ✓ to feed with iron to promote healthy green growth.
- ✓ to prune plants as they finish blooming.
- ✓ to watch for loopers—if present spray with malathion.
- ✓ to plant new bushes while still in bloom.
- ✓ to transplant any bushes not moved last month, but do not fertilize.



EPIPHYLLUMS Mary & Warren Kelly

- ✓ to feed plants with low nitrogen fertilizer as buds are forming.
- ✓ to keep plants in filtered sunlight to develop buds.
- ✓ to check for pests—aphids, snails, mealybugs, scale. Use malathion as needed.
- ✓ to remove dried branches, and add new mulch if needed.
- ✓ to check pots, add potting material rains might have washed out.
- ✓ to check trellises and branches to make sure they are secure and buds are not pushed against the trellis.

FERNS Ray Sodomka

- ✓ to fertilize with high nitrogen liquid or pellets.
- ✓ to remove dead fronds.
- ✓ to catch rain water and give to plants in covered area.
- ✓ to divide, repot, or add leaf mold to those plants needing it.
- ✓ to spray for aphids and scale.
- ✓ to plant spore.



FUCHSIAS William Selby

- ✓ to prune and shape your fuchsias for spring.
- ✓ to continue to take cuttings.
- ✓ to pinch plants that have grown from earlier pruning.
- ✓ to give liberal applications of mulch and water (if no rains) and light application of fertilizer until new growth starts.
- ✓ to fertilize ¼ strength once a week is better than once a month.
- ✓ to remember not to fertilize a dry plant.
- ✓ to keep a close watch for whitefly and/or inchworms. Use malathion at first sign of infestation.



GERANIUMS Phil Bush

- ✓ to cut back the zonals.
- ✓ to start feeding lightly, but regularly.
- ✓ to pinch plants to force outside leaves.
- ✓ to control insects, snails, and worms.
- ✓ to check potted plants—move to next size larger pot if necessary.
- ✓ to clean plants of dead leaves and blossoms.



IRIS DeeDee Washalaski

- ✓ to clean beds and weed.
- ✓ to fertilize with low-nitrogen all-purpose or liquid fish fertilizer.
- ✓ to give Japanese and Louisiana types acid food in the water can, use camellia type fertilizer.
- ✓ to use systemic spray to control aphids and thrips.



ORCHIDS Charlie Fouquette

- ✓ to repot cattleyas that are showing new eyes.
- ✓ to protect cymbidiums from showers that might harm spikes.
- ✓ to move cyms into shade when sun comes out.
- ✓ to check for slugs and snails especially after a rain.
- ✓ to feed cymbidiums with low nitrogen fertilizer.
- ✓ to place stakes to support spikes as they develop.
- ✓ to repot paphiopedilum (cypripedium) after blooming.
- ✓ to protect phalaenopsis plants that are in spike from drafts and temperature changes to prevent bud blast.

ROSES Dee Thorson

- ✓ to maintain adequate water supply if no rains.
- ✓ to fertilize with liquid rose food when new growth appears and is about 2 inches long.
- ✓ to apply organic fertilizer to established plants if not done at pruning time.
- ✓ to begin preventative spraying against mildew.
- ✓ to disbud hybrid tea roses while side buds are still immature.
- ✓ to spray for aphids or may use systemic as a soil drench to avoid burning new foliage.
- ✓ to check for infestation of slugs and/or worms—if present, malathion may be used.



VEGETABLES George James

- ✓ to set plants of broccoli, cauliflower, celery, chard, kale, lettuce, onions, and collards which are available at the nurseries.
- ✓ to start seeds of beans, corn, cucumber, eggplants, pepper, summer squash, and tomatoes in pots to protect growth—transplant to garden in April and May.
- ✓ to set plants previously started or obtained from nurseries—cucumber, eggplant, pepper, tomato, and summer squash. Protect from frost and rains with a translucent cover.
- ✓ to set bulbs of onions and cloves of garlic.



GREEN THUMB ITEMS

Larry Fedmarter

- ✓ to finish planting bare-root trees and shrubs in March.
- ✓ to prune spring-flowering shrubs. Use sprigs for home decorations.
- ✓ to divide chrysanthemums that are large enough. Select new growth from outside the old clump.
- ✓ to set out annuals—asters, pansies, larkspur, marigolds, and petunias for spring color.
- ✓ to plant perennials—carnations, gerberas, marguerites, and Shasta daisies.
- ✓ to plant cannas, gladiolus, and tuberous begonias.
- ✓ to finish shaping up shrubs and trees in March.
- ✓ to feed all lawns in April.



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